

Remarks

In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

By the above amendments, claim 48 has been cancelled without prejudice.

The rejection of claim 48 under 35 U.S.C. § 112 (1st para.) as lacking written descriptive support is rendered moot by the cancellation of claim 48 without prejudice.

The rejection of claims 1, 20, 21, 34, and 46 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,577,137 to Groger et al. ("Groger"), is respectfully traversed.

Groger teaches the preparation and use of an optical sensor that is formed by an optical waveguide and one or more fluorophores incorporated into or deposited on the optical waveguide (column 1, line 31 to column 2, line 23). The optical waveguide can be prepared from porous polymeric or ceramic materials (column 2, lines 2-6). Groger further teaches that the light-induced fluorescence is modified by the waveguide; incident light is reflected in part or enters the waveguide, while fluorescent emissions are radiated by the waveguide or propagated (i.e., guided) through the waveguide.

Groger fails to teach or suggest a biological sensor as presently claimed, which includes *a porous semiconductor material*. In the outstanding office action, the PTO has failed to identify where Groger teaches or suggests forming the structure described therein from a porous *semiconductor* material. Applicants submit that the PTO cannot do so, because Groger fails to teach or suggest using semiconductor materials to form the waveguide or coating thereon. Consequently, Groger also fails to enable one of ordinary skill in the art to make the structure thereof from materials other than polymeric or ceramic material.

Furthermore, Groger's optical sensor "*relies* for its operation on changes in fluorescence emitted from *fluorophores* either incorporated in optical waveguides or deposited on optical waveguides resulting from exposure of the fluorophores to analytes of interest" (column 1, lines 46-50, emphasis introduced). In contrast, the presently claimed invention recites that "a detectable change occurs in a refractive index of the biological sensor upon binding of the one or more probes to the target molecule."

The PTO has failed to cite any portion of Groger that discusses measuring a change in the refractive index of the sensor. The PTO has cited to col. 2, lines 2-24, col. 5,


lines 52-67, and col. 8, lines 18-32, and Figure 9, but none of these passages or figures teach or suggest this limitation of the presently claimed invention. Col. 2, lines 2-24 recites that it is the state of the fluorophore that is detected rather than a change in the refractive index. In particular, at col. 2, lines 21-24, Groger recites that "[l]ight detected from the waveguide structure contains information concerning the state of the fluorophore which, in turn, contains information about the presence of the analyte." The only reference to "refractive index" within this cited text of Groger occurs in regard to the selection of the materials, i.e., to form a structure that behaves as a waveguide (col. 2, lines 32-34). The same is true with regard to the text of Groger at col. 5, lines 52-67 ("layer 11 is a polymer or ceramic layer having a refractive index such that an optical waveguide is formed"). Col. 8, lines 18-32, referencing Figure 9, describes the formation of dielectric mirrors through the formation of multiple layers of polymer or ceramic material that each contain a fluorophore. Thus, none of the text cited by the PTO references detecting a change in a refractive index of the biological sensor upon binding of the one or more probes to the target molecule.

For these reasons, Groger cannot anticipate the presently claimed invention and, absent any suggest or teaching in Groger to modify its structure in the manner presently claimed, Groger would not have rendered obvious the presently claimed sensor. Therefore, the rejection of claims 1, 20, 21, 34, and 46 under 35 U.S.C. § 102(b) as anticipated by Groger is improper and should be withdrawn.

In view of all of the foregoing, applicant submits that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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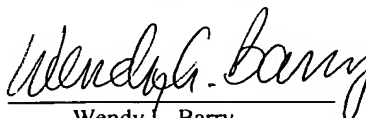

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